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Yoshinori Gondoh

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EXAMINER

CHOI, PETER Y

ART UNIT

PAPER NUMBER

1794

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/588,784	<b>Applicant(s)</b> GONDOH ET AL.	
	<b>Examiner</b> PETER Y. CHOI	<b>Art Unit</b> 1794	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 March 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 and 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on March 24, 2009, has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-4 and 10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 1-4 and 10, claim 1 recites that an average length of a smaller side of a gap enclosed by warps and wefts, assuming said gap is a rectangle, is between 0 $\mu$ m and 50 $\mu$ m, provided that neither a warp nor a weft is observed within said gap when said gap is observed from a surface of the double glass cloth. Applicants' specification as originally filed does not provide support for the limitation "assuming said gap is a rectangle" and "provided that neither a

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warp nor a weft is observed within said gap when said gap is observed from a surface of the double glass cloth.” It should be noted that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue. Therefore, the limitations are new matter.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-4 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1-4 and 10, claim 1 recites that an average length of a smaller side of a gap enclosed by warps and wefts, assuming said gap is a rectangle, is a claimed value. It is unclear exactly what structure is claimed. For example, the recitation of a smaller side of a gap presumes that there is necessarily a larger side of a gap. However, the claimed invention does not recite that there is a larger side of a gap or that the structures of the warps and wefts of the double structure are necessarily distinguished such that a smaller side of a gap and a larger side of a gap are inherent to the structure claimed. Additionally, it is unclear what constitutes “smaller” as the term is subjective and qualitative without guidance from Applicants' specification of objective and quantitative characteristics defining the scope of the claimed term. Additionally, claim 1 recites that the smaller side of a gap is enclosed by warps and wefts. However, the face side structure and the back side structure each comprise woven fabrics having warps and wefts. It is unclear if the smaller side of a gap is enclosed by warps and wefts of a

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singular face or back side structure, or if the smaller side of a gap is enclosed by warps of a face side structure and wefts of a back side structure, or vice versa. For purposes of examination, the limitation requiring an average length of a smaller side of a gap enclosed by warps and wefts is interpreted as a tight weave. Additionally, claim 10 appears to recite that the gap is formed by warps and wefts of the face side structure and warps and wefts of the back side structure.

Therefore, the gap appears to be three-dimensional. However, rectangles are two-dimensional and are generally known as four-sided parallelograms having four right angles. It is further unclear which side is the “smaller” side in the three-dimensional gap.

Additionally, claim 1 recites that the gap, “assuming said gap is a rectangle,” is a claimed value. It is unclear whether the gap is required to be a rectangle such that a rectangle is necessarily required in the claimed invention. Additionally, it is unclear whether the claimed values are only required if the gap is a rectangle, and not a necessary limitation if the gap is a shape other than a rectangle.

Additionally, claim 1 recites “provided that neither a warp nor a weft is observed within said gap when said gap is observed from a surface of the double glass cloth.” It is unclear if the limitation refers to the gap assuming it is a rectangle, or if the limitation is referring to the double glass cloth, or if the limitation is referring to any other component of the double glass cloth.

### ***Response to Arguments***

6. Applicants’ arguments filed March 24, 2009, have been fully considered but they are not persuasive. Applicants argue that “smaller” is not indefinite since a rectangle by definition has two smaller sides and two longer sides. Examiner respectfully disagrees. A rectangle does not

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necessarily comprise two smaller sides and two longer sides. A rectangle is generally known as a four-sided parallelogram having four right angles and is not required to have sides of different lengths. Additionally, it is unclear from Figure 1 if the gap is necessarily within the claimed structure and/or has two smaller sides and two longer sides.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-4 and 10 are rejected under 35 U.S.C. 103(a) as obvious over USPN 5,175,034 to De La Porte in view of USPN 6,325,110 to Scari.

Regarding claims 1-4 and 10, De La Porte teaches a double glass cloth, comprising a double glass cloth which is composed of warps and wefts and has a double structure comprising a face side structure and a back side structure, wherein the face side structure and the back side structure form two layers and are bound with a woven structure into one piece (see entire document including column 1 line 4 to column 2 line 35, column 3 line to column 5 line 27, Figures 1-5).

Regarding claims 1-4 and 10, De La Porte does not appear to teach that the total thickness of two layers of the double glass cloth is 10µm or more and 400µm or less. Since De La Porte is silent as to the thickness the double glass cloth, it would have been necessary and therefore obvious to look to the prior art for conventional thicknesses. Scari is classified in the

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same field in the art as De La Porte and provides this conventional teaching, showing that it was known in the woven fabric reinforcement art to form a woven glass fabric suitable for use in laminated composite structures as a woven fabric reinforcement, the woven glass fabric comprising a plain weave, and the fabric having a thickness ranging from 0.035 mm up to 0.13 mm (Scari, column 1 line 4 to column 3 line 15, column 3 line 42 to column 5 line 10). It would have been obvious to one of ordinary skill in the woven fabric reinforcement art at the time the invention was made to form the woven double glass fabric of De La Porte, wherein the fabrics each have the thicknesses as taught by Scari, as De La Porte and Scari are classified in the same field in the art, and motivated by the desire of forming a conventional woven glass fabric reinforcement having thicknesses known in the art to be predictably suitable for use in woven glass fabric reinforcement.

Regarding claim 1-4 and 10, the prior art does not appear to teach that an average length of a smaller side of a gap enclosed by warps and wefts, assuming the gap is rectangle, is between 0 $\mu$ m and 50 $\mu$ m, provided that neither a warp nor a weft is observed within the gap when the gap is observed from a surface of the double glass cloth. However, De La Porte teaches that the properties of the cloth can be modified with cover wefts, in addition to the choice of the pile threads and cover weft threads (De La Porte, column 2 lines 35-58) in order to arrive at a denser arrangement of threads (Id., column 3 lines 22-49). Additionally, Scari teaches that optimizing the crossovers between warp and weft yarns results in dimensionally stable composite structure. It would have been obvious to one of ordinary skill in the woven fabric reinforcement art at the time the invention was made to form the woven fabric reinforcement of the prior art, wherein the warps and wefts are optimized such that the resulting weave is a tight weave, motivated by the

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desire of forming a conventional woven fabric reinforcement with a desired weave in order to arrive at a denser arrangement of threads and/or dimensionally stable composite structure.

Additionally, it is reasonable for one of ordinary skill in the woven fabric reinforcement art to expect that forming a woven fabric reinforcement with a tight or optimized weave results in a stiffer, stronger, denser and less flexible structure suitable for the intended application, since such characteristics naturally flow from the type of weave, absent evidence to the contrary.

Additionally, it is reasonable for one of ordinary skill in the woven fabric reinforcement art to expect that the weave of the prior art would be within the scope of a rectangle, wherein neither a warp nor a weft is observed within the gap when the gap is observed from a surface of the double glass cloth, as the weave of the prior art is substantially similar to a plain weave, and the claimed characteristics would naturally flow from the structure of the prior art, absent evidence to the contrary.

Additionally, although the prior art does not appear to teach that the double glass cloth has been subjected to a fiber-opening processing by a water flow pressure or by vibration at high frequency using a liquid as a medium, such a limitation appears to be a product by process limitation. Absent a showing to the contrary, it is Examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. The burden has been shifted to Applicants to show unobvious difference



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between the claimed product and the prior art product. The applied prior art either anticipated or strongly suggested the claimed subject matter. It is noted that if Applicants intend to rely on Examples in the specification or in a submitted declaration to show unobviousness, Applicants should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with the applied prior art.

Regarding claims 1-4 and 10, the prior art teaches that the double glass cloth is suitable for use for a printed wiring board (Scari, column 1 lines 4-11). Additionally, the limitation appears to recite an intended use of the double glass cloth. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Since the prior art teaches a substantially similar structure and composition as the claimed double glass cloth, the invention of the prior art appears to be capable of performing the intended use.

Regarding claim 2, the prior art teaches that the face side structure comprises face side warps which only weave said face side structure, face side wefts which only weave said face side structure and common yarns which weave both said face side structure and said back side structure, and the back side structure comprises back side warps which only weave said back side structure, back side wefts which only weave said back side structure and the common yarns which weave both said face side structure and said back side structure (De La Porte, column 1 line 4 to column 2 line 35, column 3 lines 22-49, column 4 line 24 to column 5 line 2, Figures 1-3).

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Regarding claims 3 and 4, the prior art teaches that the face side structure and back side structure comprise a plain weave (De La Porte, column 3 lines 22-49).

Regarding claim 10, the prior art teaches that the face side structure and back side structure are bound together at a rate of at least one location per unit structure (De La Porte, column 1 line 4 to column 2 line 35, column 3 lines 22-49, column 4 line 24 to column 5 line 2, Figures 1-3).

Regarding claim 10, the prior art does not appear to specifically teach that the gap is formed by being enclosed by a warp and a weft adjacent to each other of the face side structure and a warp and a weft adjacent to each other of the back side structure. However, the prior art teaches that the double layer cloths are each woven in a manner derived from a plain weave as shown in Figures 1-5. Additionally, the prior art teaches that the face cloth and the back cloth are attached to each other spaced apart, or it is possible for the face cloth and the base cloth to be bonded to one another while matching each other (De La Pore, column 3 lines 22-63).

Additionally, the prior art teaches that the threads of the face cloth and the back cloths can be arranged offset relative to one another (Id., column 5 lines 22-27). Therefore, although the prior art does not disclose the claimed structure, the claimed structure is deemed to be inherent to the structure in the prior art since the prior art teaches an invention with a substantially similar structure and composition as the claimed invention. Products of identical structure and composition cannot have mutually exclusive properties. The burden is on the Applicants to prove otherwise.

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9. Claims 1-4 and 10 are rejected under 35 U.S.C. 103(a) as obvious over De La Porte in view of Scari and USPN 4,590,539 to Sanjana.

Regarding claims 1-4 and 10, the prior art appears to teach that it would have been obvious to one of ordinary skill in the art to optimize the warps and wefts such that the resulting weave is a tight weave within the scope of the claimed limitation requiring an average length of a smaller side of a gap enclosed by warps and wefts to be between 0 $\mu$ m and 50 $\mu$ m. Additionally, De La Porte teaches that fibers suitable for the double cloth may comprise glass fibers or polyamide fibers (De La Porte, column 2 lines 17-28) and that the woven fabric may be further impregnated with a polymer matrix (Id., column 2 lines 34-68). As further evidence that it would have been obvious to optimize the warps and wefts, Sanjana is classified in the same field in the art as the prior art, and teaches a plain woven fabric suitable for use for printed circuit boards, wherein the plain woven fabric may be embedded in a polymer matrix (Sanjana, column 1 line 13 to column 2 line 46, column 3 lines 33-59). Sanjana teaches that the plain woven fabric is preferably a tight weave as that reduces the resin content of the laminate. It would have been obvious to one of ordinary skill in the woven fabric reinforcement art at the time the invention was made to form the woven fabric reinforcement of the prior art, wherein the weave is a tight weave, as taught by Sanjana, as the prior art and Sanjana are classified in the same field in the art, and motivated by the desire of forming a conventional woven fabric reinforcement with a tight weave to reduce the resin content of the laminate, based on the intended application.

10. Claims 1-4 and 10 are rejected under 35 U.S.C. 103(a) as obvious over De La Porte in view of Scari and Applicants' specification.

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Regarding claims 1-4 and 10, the prior art appears to teach a substantially similar structure and composition as the claimed invention. Additionally, although the prior art does not appear to specifically teach that the double glass cloth has been subjected to a fiber-opening process, Applicants' specification expressly teaches that it was known in the glass cloth art at the time the invention was made to subject woven glass cloth to a fiber-opening process to reduce the variation in the amount of glass in the thickness direction and in the shape of holes (*see* Applicants' specification at pages 5 and 6). It would have been obvious to one of ordinary skill in the glass cloth art at the time the invention was made to form the double glass cloth of the prior art, wherein the double glass cloth has been subjected to a fiber-opening process, as disclosed by Applicants' specification, motivated by the desire of forming a conventional double glass cloth which has been subjected to a known process which is known to advantageously reduce the variation in the amount of glass in the thickness direction and in the shape of holes, and such a process would yield a predictably resulting double glass cloth, suitable for the intended application.

11. Claims 1-4 and 10 are rejected under 35 U.S.C. 103(a) as obvious over De La Porte in view of Scari and Sanjana and Applicants' specification.

Regarding claims 1-4 and 10, the prior art appears to teach a substantially similar structure and composition as the claimed invention. Additionally, although the prior art does not appear to specifically teach that the double glass cloth has been subjected to a fiber-opening process, Applicants' specification expressly teaches that it was known in the glass cloth art at the time the invention was made to subject woven glass cloth to a fiber-opening process to reduce

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the variation in the amount of glass in the thickness direction and in the shape of holes (*see* Applicants' specification at pages 5 and 6). It would have been obvious to one of ordinary skill in the glass cloth art at the time the invention was made to form the double glass cloth of the prior art, wherein the double glass cloth has been subjected to a fiber-opening process, as disclosed by Applicants' specification, motivated by the desire of forming a conventional double glass cloth which has been subjected to a known process which is known to advantageously reduce the variation in the amount of glass in the thickness direction and in the shape of holes, and such a process would yield a predictably resulting double glass cloth, suitable for the intended application.

### ***Response to Arguments***

12. Applicants' arguments filed March 24, 2009, have been fully considered but they are not persuasive. Applicants argue that De La Porte does not teach that the total thickness of the two layers is between 10 $\mu$ m and 400 $\mu$ m and that the average length of the smaller side a gap, assumed to be a rectangle, is between 0 and 50 $\mu$ m, which improves the workability and the quality of the thin double glass cloth. Examiner respectfully disagrees. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. As set forth above, De La Porte alone is not relied on to teach the claimed thickness and lengths. Therefore, Applicants' arguments are not commensurate in scope with the current rejection. Additionally, the claimed invention does not recite any objective and/or quantitative characteristics associated with improved workability and quality of the thin double glass cloth. It is well-settled that unsupported arguments are not a substitute for objective

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evidence. Applicants' arguments directed to the improved workability and quality of the thin double glass cloth does not necessarily differentiate the claimed invention from the invention of the prior art. Additionally, the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. There is no requirement that a person of ordinary skill in the art would have recognized the inherent disclosure at the time of invention, but only that the subject matter is in fact inherent in the prior art reference. Since the prior art teaches a substantially similar structure and composition as the claimed double glass cloth, it would be reasonable for one of ordinary skill in the art to expect that the invention of the prior art would possess substantially similar properties, absent evidence to the contrary.

Applicants argue that the references do not teach that any fiber-opening process can be performed on the glass cloth or the advantages resulting from such a processing. Examiner respectfully disagrees. Since the prior art teaches a substantially similar structure and composition as the claimed double glass cloth, it would be reasonable for one of ordinary skill in the art to expect that the invention of the prior art can be subjected to the claimed process, absent evidence to the contrary. Additionally, the fiber-opening process appears to be a product-by-process limitation directed to the intermediate product. As set forth above, absent a showing to the contrary, it is Examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. Since the prior art teaches a substantially similar structure and composition as the claimed double glass

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cloth, the invention of the prior art renders obvious the claimed invention, absent evidence to the contrary.

Additionally, as set forth above, although the prior art does not appear to specifically teach that the double glass cloth has been subjected to a fiber-opening process, Applicants' specification expressly teaches that it was known in the glass cloth art at the time the invention was made to subject woven glass cloth to a fiber-opening process to reduce the variation in the amount of glass in the thickness direction and in the shape of holes (*see* Applicants' specification at pages 5 and 6). It would have been obvious to one of ordinary skill in the glass cloth art at the time the invention was made to form the double glass cloth of the prior art, wherein the double glass cloth has been subjected to a fiber-opening process, as disclosed by Applicants' specification, motivated by the desire of forming a conventional double glass cloth which has been subjected to a known process which is known to advantageously reduce the variation in the amount of glass in the thickness direction and in the shape of holes, and such a process would yield a predictably resulting double glass cloth, suitable for the intended application.

Additionally, although Applicants recite that the fiber-opening process makes it possible to reduce in-plane gaps of the double glass cloth, such a recitation does not entail that the reduction in in-plane gaps is necessarily present in the claimed invention, as the reduction of in-plane gaps would be inconsistent with the claimed limitation "assuming the gap is a rectangle." If the in-plane gaps are reduced, the limitations requiring the assumption that the gap is a rectangle and that the gap reduced by a fiber-opening process appear to be mutually exclusive and incapable of simultaneously being present in the claimed invention.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER Y. CHOI whose telephone number is (571)272-6730. The examiner can normally be reached on Monday - Friday, 08:00 - 15:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter Y Choi/  
Examiner, Art Unit 1794

/Andrew T Piziali/  
Primary Examiner, Art Unit 1794